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EXAMINER	
GREY, CHRISTOPHER P	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/816,578	SYRJARINNE, JARI	
	Examiner	Art Unit	
	Christopher P Grey	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-8 and 10-17 and 19, and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner (WO 99/57573) in view of Bloebaum (US 6,295,023) in further view of Benham (US 5297869).

Claim 1 Krasner shows in a GPS system, a modulated signal being sent from one or more satellites (signal samples contain at least in part common information), to a receiver that performs demodulation. A receiver in the GPS (standard positioning service) system is capable of combining common information (using summation) between two or more portions of one or more satellite messages (analysis signal) to determine navigation information such as time and position, disclosed in elements 104, 106 and 108 in Fig 1 and on page 5 lines 21-34. This combination of common data may represent TOW, almanac, and or other common information between a set of satellite messages.

Krasner does not specifically disclose the signal transmitted by two or more satellites is received, the transit time differences of the received signals are determined for mutual synchronization of the signals transmitted from different satellites.

Bloebaum, shows a method for receiving a plurality of signals in a GPS system, where mutual synchronization is accomplished by providing a first timing

synchronization reference, and then expected timing for others of the plurality of GPS satellites are adjusted based on the first timing sync reference (transit time differences), as disclosed in Col 6 lines 30-48.

Bloebaum also discloses detecting the edge of bits (Col 15 lines 44-45).

It would have been obvious to one skilled in the art at the time to modify the combination of samples signal (analysis signal) produced in the primary reference with the method of receiving a GPS signal, particularly correlation with a reference signal (which is common in a GPS receiver) in the secondary reference in order to retrieve navigation information, TOW information and other information contained in the analysis signal. Other reasons for the modification are for initial synchronization and improving the SNR of the incoming signal in the receiver for further processing.

The combination of Krasner and Bloebaum do not specifically disclose searching the received signals using a phase locked loop to identify edges of bits of the information included in the received signals.

Benham discloses searching the received signals using a phase locked loop to identify edges of bits of the information included in the received signals **(fig 3, edge triggered PLL's 6 and 7 for detecting data 1's and 0's).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combination of Krasner and Bloebaum, specifically the combination of data disclosed by Krasner, so that the information that is detected for combination is phase lock looped such as that shown by Benham. The motivation for this modification is to improve the accuracy and jitter performance (abstract).

Claim 2 the Krasner discloses all of the limitations except for: reference information is formed, and said reference information is compared to said analysis signal for finding at least one said signal, which contains the same information;

The secondary reference, Bloebaum shows the determination of expected information (reference information) that contains navigation data, TOW fields and HOW fields, (disclosed in Col 11 lines17-37). The expected information is compared to the actual information received from the plurality of satellites, which was disclosed in the first reference as a combination of common information (analysis signal). This comparison is accomplished by correlation, as disclosed in Col 5 lines 24-44.

Claim 3 Krasner discloses all of the limitations of claim 3, but does not disclose correlation is used in the comparison.

Bloebaum shows the determination of expected information (reference information) that contains navigation data, TOW fields and HOW fields, (disclosed in Col 11 lines17-37). The expected information is compared to the actual information received from the plurality of satellites, which was disclosed in the first reference as a combination of common information (analysis signal). This comparison is accomplished by correlation, as disclosed in Col 5 lines 24-44.

Claim 4 Kranser discloses all of the limitations of claim 4, but does not disclose the information to be transmitted is sent in one or more data frames (SFI-SF5), and at least one data frame (SFI-SFS) includes at least an initial synchronization part

(preamble, P), characterized in that the preamble (P) is searched from the analysis signal in the method;

Bloebaum shows the comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data: Navigation data such as ephemeris, TOW information, preamble, etc as disclosed in Col 15 lines 44-67.

Claim 5 Krasner discloses all of the limitations of claim 5, but does not disclose the information to be transmitted is sent in one or more data frames (SFI-SF5), and at least one data frame (SFI-SF5) includes at least time data (TOW), characterized in that said time information (TOW) is searched from the analysis signal in the method;

Bloebaum shows the comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data: Navigation data such as ephemeris, TOW information, preamble, etc as disclosed in Col 15 lines 44-67.

Claim 6 Krasner discloses all of the limitations of claim 6, but does not disclose the information to be transmitted is sent in one or more data frames (SF1-SF5), and at least one data frame (SFI-SFS) includes at least identification information (1D),

characterized in that said identification information (ID) is searched from the analysis signal in the method.

The secondary reference, Bloebaum discloses the comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:
Navigation data such as ephemeris, TOW information, preamble, etc (where etc. is aimed at ID information which is necessary for comparison) as disclosed in Col 15 lines 44-67.

Claim 7 Krasner discloses all of the limitations of claim 7, but does not disclose the information to be transmitted includes at least ephemeris data, characterized in that ephemeris data is used in the method for determining the location of the receiver.

The secondary reference discloses the comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data: Navigation data such as ephemeris etc. as disclosed in Col 15 lines 44-67.

Claim 8 Krasner discloses all of the limitations of claim 8, but does not does not disclose the information to be modulated in the method is binary information, and thus the information to be modulated consists of a number of information bits, each of which has either the first or the second binary value.

The secondary reference Bloebaum shows that the acquired signal, which is code modulated is sent in the form of navigation bits (information bits), as disclosed in Col 5 lines 5-23.

It would have been obvious to one skilled in the art at the time to modify the combination of samples signal (analysis signal) produced in the primary reference with the method of receiving a GPS signal, particularly correlation with a reference signal (which is common in a GPS receiver) in the secondary reference in order to retrieve navigation information, TOW information and other information contained in the analysis signal. Other reasons for the modification are for initial synchronization and improving the SNR of the incoming signal in the receiver for further processing.

Claim 10, 19 Krasner discloses in a GPS system, which transmits satellite signals, a means within the receiver by which to combine common portions of two or more satellite signals (analysis signal). This method is known as inter SV signal processing, which suggests that this is accomplished in a signal processing means (DSP), as disclosed in page 5 line 21- page 6 line 8. The primary reference makes mention that the invention is applicable to many forms of the GPS receiver as disclosed in Page 4 line11-24.

Krasner discloses a demodulation means for performing demodulation on signals (element 106 in fig 1).

Krasner discloses performing synchronization (element 414 in fig 4)

Krasner discoses the receiver receiving at least two signals transmitted by satellites (see abstract)

Krasner does not specifically disclose the synchronization means comprise at least means (7, 10, 11) for determining the transit time differences of the received signals, means (3) for synchronizing the received signals of different satellites (SVI-SV4) for mutual synchronization of the signals on the basis of said transit time differences.

The secondary reference, Bloebaum, shows a method for receiving a plurality of signals in a GPS system, where mutual synchronization is accomplished by providing a first timing synchronization reference, and then expected timing for others of the plurality of GPS satellites are adjusted based on the first timing sync reference (transit time differences), as disclosed in Col 6 lines 30-48.

It would have been obvious to one skilled in the art at the time to modify the combination of samples signal (analysis signal) produced in the primary reference with the method of receiving a GPS signal, particularly correlation with a reference signal (which is common in a GPS receiver) in the secondary reference in order to retrieve navigation information, TOW information and other information contained in the analysis signal. Other reasons for the modification are for initial synchronization and improving the SNR of the incoming signal in the receiver for further processing.

The combination of Krasner and Bloebaum do not specifically disclose searching the received signals using a phase locked loop to identify edges of bits of the information included in the received signals.

Benham discloses searching the received signals using a phase locked loop to identify edges of bits of the information included in the received signals **(fig 3, edge triggered PLL's 6 and 7 for detecting data 1's and 0's).**

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combination of Krasner and Bloebaum, specifically the combination of data disclosed by Krasner, so that the information that is detected for combination is phase lock looped such as that shown by Benham. The motivation for this modification is to improve the accuracy and jitter performance (abstract).

Claim 11 Krasner disclose all of the limitations of claim 11 but fail to disclose a receiver (MS) comprises at least means (16) for forming at least one piece of reference information, and comparison means (7, 8) for comparing said reference information to said analysis signal for finding at least one said signal, which contains the same information.

The secondary reference, Bloebaum teaches a GPS system, where within, a GPS receiver computes expected symbols and messages (generates a reference signal) as disclosed in Col 10 lines 18-33. The receiver also has a means by which a comparison (correlation) is made between input signals and the expected message as disclosed in elements 300, 302 and 305 in fig 8, which is an illustration having operations carried out by a CPU.

The secondary reference also teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information

(analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Claim 12 Krasner disclose all of the limitations of claim 12 but fail to disclose a receiver (MS), characterized in that the comparison means comprise means (7) for performing correlation between said reference information and said analysis signal.

The secondary reference, Bloebaum teaches a GPS system, where within, a GPS receiver computes expected symbols and messages (generates a reference signal) as disclosed in Col 10 lines 18-33. The receiver also has a means by which a comparison (correlation) is made between input signals and the expected message as disclosed in elements 300, 302 and 305 in fig 8, which is an illustration having operations carried out by a CPU.

Claim 13 Krasner disclose all of the limitations of claim 13 but fail to disclose a receiver (MS), in which the information to be transmitted has been sent in one or more data frames (SF1-SF5), and at least one data frame (SFI-SF5) includes at least an initial synchronization part (preamble, P), characterized in that said comparison means comprise means (3, 4) for searching said preamble (P) from the analysis signal.
The secondary reference, Bloebaum also teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Bloebaum discloses searching navigation data such as ephemeris, TOW information and the preamble as disclosed in Col 15 lines 53-67.

It would have been obvious to one of the skill in the art at the time of the invention to modify the teachings of Krasner so as to search the information fields as disclosed by bloebaum. The motivation for this modification is to retrieve information about the current and upcoming information.

Claim 14 Krasner disclose all of the limitations of claim 14 but fail to disclose a receiver (MS), in which the information to be transmitted has been sent in one or more data frames (SFI-SF5), and at least one data frame (SFI-SF5) includes at least time data (TOW), characterized in that said comparison means comprise means (3, 4) for searching said time data (TOW) from the analysis signal.

Bloebaum teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Bloebaum discloses searching navigation data such as ephemeris, TOW information and the preamble as disclosed in Col 15 lines 53-67.

It would have been obvious to one of the skill in the art at the time of the invention to modify the teachings of Krasner so as to search the information fields as disclosed by bloebaum. The motivation for this modification is to retrieve information about the current and upcoming information.

Claim 15 Krasner disclose all of the limitations of claim 15 but fail to disclose the information to be transmitted has been sent in one or more data frames (SFI SF5), and at least one data frame (SFI SF5) includes at least identification information (1D), characterized in that said comparison means comprise means (3, 4) for searching said identification information (ID) from the analysis signal.

Bloebaum teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Bloebaum discloses searching navigation data such as ephemeris, TOW information, the preamble, etc. (where etc. is aimed at ID information which is necessary for comparison) as disclosed in Col 15 lines 53-67.

It would have been obvious to one of the skill in the art at the time of the invention to modify the teachings of Krasner so as to search the information fields as disclosed by bloebaum. The motivation for this modification is to retrieve information about the current and upcoming information.

Claim 16 Krasner disclose all of the limitations of claim 16 but fail to disclose a receiver (MS), in which the information to be transmitted includes at least ephemeris data, characterized in that the receiver also comprises means (3, 4, 7, 8) for using said ephemeris data for determining the location of the receiver (MS).

Bloebaum teaches a GPS system with a receiver which makes a comparison between expected data (reference signal) and sent satellite information (analysis signal), where the expected information is determined (searched) in the analysis message using the following data:

Bloebaum discloses searching navigation data such as ephemeris, TOW information, the preamble, etc. (where etc. is aimed at ID information which is necessary for comparison) as disclosed in Col 15 lines 53-67.

It would have been obvious to one of the skill in the art at the time of the invention to modify the teachings of Krasner so as to search the information fields as disclosed by bloebaum. The motivation for this modification is to retrieve information about the current and upcoming information

Claim 17 Krasner disclose all of the limitations of claim 17 but fail to disclose the information to be modulated is binary information, and thus the information to be modulated consists of a number of information bits, each of which has either the first or the second binary value.

Bloebaum shows that the acquired signal, which is code modulated is sent in the form of navigation bits (information bits), as disclosed in Col 5 lines 5-23.

Claim 20 Krasner does not specifically disclose a cross correlation of the received signal to a known data sequence out to correct transmit time differences without using any auxiliary data from a network.

Bloebaum, shows a method for receiving a plurality of signals in a GPS system, where mutual synchronization is accomplished by providing a first timing synchronization reference, and then expected timing for others of the plurality of GPS satellites are adjusted based on the first timing sync reference (transit time differences), as disclosed in Col 6 lines 30-48, where it would have been obvious to one of the ordinary skill in the art at the time of the invention that the first timing reference and the expected timing references do not require auxiliary data.

It would have been obvious to one skilled in the art at the time to incorporate the analysis signal produced in the primary reference, into the receiving functions of the GPS system of the secondary reference, and modifying it so as to have the major components enclosed within the third reference. The motivation for these incorporations and modifications is in order to achieve a GPS receiver capable of efficiently handling weak SNR signals by combining common information of input signals and performing correlation with a reference signal.

Claim 21 Krasner discloses not using any information stored in the receiver to determine the parts of the received signals that are common to each other (page 6 lines 1-11 and see page 17 line 5-page 18 line 27).

Claim 22 Krasner discloses the parts of the at least two synchronized signals that are common to each other containing common time data (page 17 line 5-page 18 line 27, TOW-time of week data).

2. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasner (WO 99/57573) in view of Bloebaum (US 6,295,023) in further view of Benham (US 5297869), in further view of Farmer et al. (5202694).

Claim 9, 18 The modified Krasner does not disclose the code used in the modulation being formed of chips on the basis of the code either a first or second value is selected for each chip, where a signal modulated with the set of chips forms an epoch, that at least one of the epochs is used in the transmission of each information bit, and that the modulation is carried out so that if the value of the information bit to be modulated is the first binary value, values selected for the chips of the epoch are used in the modulation, or if the value of the information bit is the second binary value, the value opposite to the value selected for each chip of the epoch is used in modulation.

Farmer discloses within the background of the invention using a C/A code for modulation, where the code is made up of a number of chips (Col 1 lines 25-42 and Col 2 lines 3-22). Farmer discloses an X1A and X1B code sequence that is generated, where a 12 bit register state is composed for each (Col 3 lines 48-Col 4 lines 44). Farmer discloses the chips forming an epoch (Col 2 lines 3-21), where the epochs used in the transmission of each information bit (Col 3 lines 48-67). Farmer discloses the X1A code when generated, cycling through a specific number of chips, and when the X1B code is generated cycling through a number of chips (Col 3 line 48-Col 4 line 21), where the codes for each are different (Col 3 lines 6-10).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to further modify the modulation as performed within the modified Krasner, to

perform C/A modulation as disclosed by Farmer. The motivation for this modification is to be able to allow a receiver to distinguish between signals transmitted by different satellites (Col 1 lines 25-42).

Response to Arguments

3. Applicant's arguments with respect to claims 1, 10 and 19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Grey whose telephone number is (571)272-3160. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (571)272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher Grey
Examiner
Art Unit 2616

3/28/07

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